NIPE FAGIO NATIONAL REPORT 2021

WASTE AND BRAND AUDITS REPORT

#PlastikiYakoMazingiraYetu

Nipe Fagio | ww.nipefagio.co.tz | P.O Box 11747, Dar es Salaam

Executive Summary

In the years 2018, 2019, 2020 and 2021, in collaboration with 32,151 participants, we were able to conduct waste and brand audits in community and beach cleanups to highlight the waste composition in Tanzania. After analysing 350,000 units of waste, the results show that, on average, 64% of the waste in the sample bags audited is plastic waste. In 2021 plastic waste accounted for 76% of all waste collected.

Through these Brand audits, we have been able to show that local manufacturers & producers are the leading polluters with 75% of all waste audited while foreign products cover 25%. Our audit analysis has found that the top 10 plastic polluters in the country are: Mohammed Enterprises Tanzania Limited (MeTL), Bakhresa food products limited, U Fresh food limited, Chemi & Cotex limited, Watercom limited, Unilever limited, The Coca-cola company, Tanzania distillers limited, SBC Tanzania limited and Tanzania Breweries Limited.

2021, has been an even more pivotal year for us to hold plastic producing corporations accountable for their contribution to climate change as the world's leaders came together at the United Nations Climate Change Conference (COP26) to negotiate how to limit global heating to 1.5°C.

Plastics rely on fossil fuels for their production, and the world's addiction to single-use plastic is a serious contributor to the climate crisis. Studies show that if we were to consider the entire plastic lifecycle as a country, it would be the fifth-largest emitter of greenhouse gases in the world (Zheng, Et al, 2019).

According to the waste & brand audit analysis that we conducted in the 4 years between 2018 and 2021, we found that Mohammed Enterprises Tanzania Limited and Bakhresa Food Products Limited have taken the lead as top plastic polluters in Tanzania. With Mohammed Enterprises Tanzania Limited taking the lead for 3 years in a row.

Analysing the data in hand, it is simply not enough to rely on recycling efforts alone to handle the pollution and climate crisis caused by these single-use plastic items. We desperately need serious and drastic measures to be adopted and followed through to avoid collapsing under the single-use plastic waste we produce- both figuratively and literally.

The unfair side of this plastic story is that the youth of this country will inherit an environment that is suffocating under critical climatic conditions and plastic pollution, even though they have had the least contribution to such a state.

It is clear that we cannot depend on the producers/manufacturers to voluntarily commit to reducing their production and sales targets of single-use plastics. For this reason, it is pertinent for our national government to take the further step of holding these corporations accountable for their pollution.

We are aware and are appreciative of the measures that the government has already taken to reduce single-use plastic. Especially with the banning of plastic grocery bags and the expected banning of soft plastic wrappers covering plastic beverage bottles and plastic straws.

However, we believe that more can be done. As global citizens, we cannot continue to rely on fossil fuels, especially those that are converted into single-use plastic products that are littering our communities. For this reason, we urge our national governments to call for single-use plastic manufacturers/producers to:

- Reveal the full extent of their plastic footprint,
- Reduce such a footprint by significantly setting and implementing targets to be achieved in the near future, and
- Reinvent the delivery systems for their products in exchange for reusable and plastic-free packages.

Photo: World Cleanup Day 2018, Nipe Fagio

Introduction

Prior to the introduction of plastic, societies were reliant on clay and glass for storage purposes. However, these materials were considered heavy and easy to break. Additionally, these items relied heavily on earth's natural resources. In parallel, the fossil fuel industry had a byproduct from fossil fuel extraction that could be used to produce a variety of items. As a consequence, a newer, more durable and convenient material was created- Plastic.

So how has a material that was once thought to be the saviour of our existence has now turned into a monster that is hard to tame? The reality is that not only is plastic production consuming a significant share of the earth's natural resources, but its distribution and after-life is threatening our entire existence.

The threat from plastic primarily emanates from the Greenhouse Gases that the production, distribution and disposal of the plastic waste releases as well as the land & water pollution associated with the mismanagement of the plastic waste.

Photo: World Cleanup Day 2021, Nipe Fagio

As of 2015, we are producing 381 million tons of plastic annually (Ritchie et al, 2018). Of which approximately 60-90 million tons of plastic waste is mismanaged (Andrady et al, 2019).

What is highly concerning is the fact that if plastic production and consumption are left unchecked, we are looking at a production of about 762 million tonnes of plastic annually by 2050.

About 90% of plastic production relies on fossil fuels. Studies indicate that 6% of the global oil is used to produce plastic for global consumption. This number is strikingly equal to the oil consumed by the aviation industry across the world (World Economic Forum, 2016).

If the production of plastic relies heavily on fossil fuels, then it is no surprise that our reliance on this 'convenient' material is having a negative consequence on the climate emergency.

A recent report by the Break Free from Plastic Movement has indicated that if the lifecycle of plastic were a country, it would be the 5th largest greenhouse gas emitter globally. This ranking is closely after China, the United States, India and Russia (Break free from Plastic Brand audit report, 2021).

Worsening climate change condition due to human actions has a high correlation to the extremities and intensities of weather events. This will only lead to an adverse impact to global ecosystems (including human health and well-being).

According to the Intergovernmental Panel on Climate Change (IPCC), humans must limit temperature increases to no more than 1.5°C above pre-industrial levels, to avoid catastrophic weather conditions. The business-as-usual attitude that we have been operating under is no longer feasible. With a deadline of fewer than 30 years, we must enact DRASTIC measures to curb our contribution to climate change. One sure way to do this is through tackling plastic production and consumption at every level, globally.

In the context of Tanzania, the impact of climate change can be seen in several areas. From rising temperatures in the coastal regions to unpredictable floods and droughts, to rising sea levels to the melting of the glacier on top of one of our Nation's most treasured sites- Mount Kilimanjaro.

Considering population growth in Tanzania, if drastic measures are not taken to change our relationship with plastic, the climate crisis will only get worse. In Dar es Salaam alone, the population growth is expected to rise from approximately 6 million people today to 13.5 million by 2035 (National Geographic, 2019).

Photo: *World Cleanup Day 2018, Nipe Fagio*

Plastic problem in Tanzania

Waste and Brand audits conducted since 2018 highlighted that the most common type of plastic found in the environment is polyethene terephthalate (PET) with 23,094 (33%) pieces, followed by Low-Density Polyethylene (LDPE) 22,112 (31%) pieces, High-Density Polyethylene (HDPE) 5%, while multi-layered, single-layered, polystyrene and polypropylene together were 20% (Rocha, 2021).

There have been efforts by the Tanzanian government to encourage investors to invest in plastic waste recycling as the opportunities are vast in the country. However, out of the 30%-40% of recyclable material, less than 10% is being recycled. These materials include plastic and glass bottles, scrap metal, papers and aluminium cans. These statistics indicate that solving the plastic pollution problem is not possible through recycling efforts alone. Holding this information it is quite clear that single-use plastic items that are piling up in our dumpsites (both formal and informal) must be replaced with sustainable product delivery systems to ensure that companies continue to profit and that our planet regains its balance.

Valuing the importance of Tanzanian industries for the country's prosperity does not mean ignoring the plastic crisis that the country is in. We hope to find a mutually beneficial solution in which industries produce without harming the environment as an unintended consequence. In support of this argument, for effective change to be seen, the world needs systemic and structural changes within our economies.

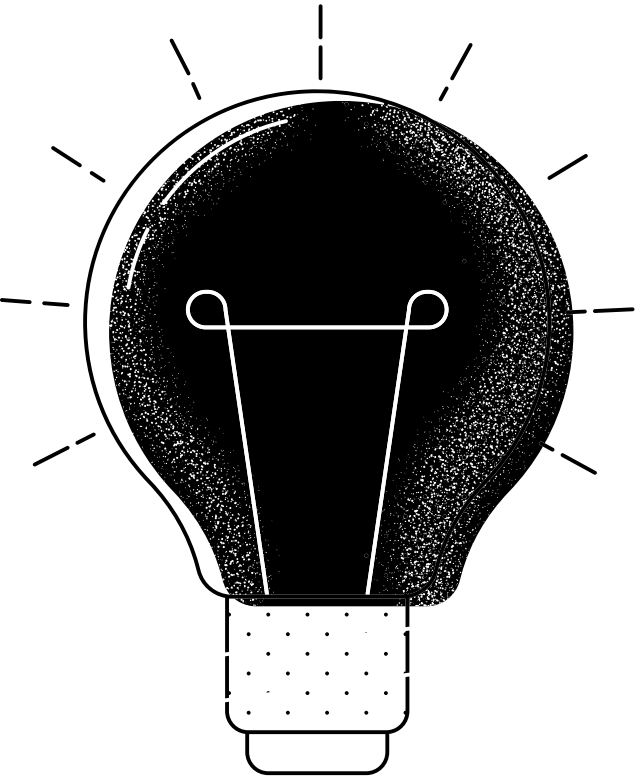
As of 2018, out of the 100 largest economies in the world, 69 are large corporations and not countries. This just cements the need for companies to take the lead in making drastic changes towards our fight against plastic waste (Break free from Plastic Brand audit report, 2021). Through the brand audits that we have conducted in the past 4 years, we have been equipped with substantial information to point us to the biggest producers of plastic wastes in Tanzania.

Photo: Polluted Beach in Dar Es Salaam

NIPE FAGIO

Our Statement

Our Statement is to provide practical education and solutions on waste management to promote positive behavior change.



Our Objective

Our Objective is to turn Tanzania into a replicable example in the pursuit of sustainable development in East Africa; encouraging the East African community to grow and develop to be a striving clean economy supported by a conscious and engaged population.

Our Vision

Our Vision is a clean, healthy, and safe Tanzania. Our Mission is to raise awareness and engage civil society, the private and the public sector in pursuing a sustainable lifestyle, identifying opportunities to improve waste management and reduce carbon urban pollution through education and actions that create economical value.

Phasing out of single use plastic

Definition of Extended Producer Responsibility (EPR) Regulations

Producers to reveal their plastic production

OUR PLEDGES

OUR CAMPAIGNS

#PlastikiYakoMazingiraYetu

A campaign aimed at extending the plastic bag ban to include a single-use plastic ban started in 2020.

©Imani Msamila

OUR CAMPAIGNS

Let's do it! Tanzania

Let's Do It Tanzania Campaign

The campaign focuses on local waste management solutions and climate change adaptation measures that help the reduction of greenhouse gas emissions and provide environmental, social and economic benefits to Tanzania.

World Cleanup day 2021 ©NipeFagio

OUR CAMPAIGNS

World Clean Up Day

A campaign that commemorates world cleanup day annually by having a celebratory peak event of cleanups across the country. Each year on this day, thousands of participants across the country get their hands dirty in various cleanup sites. More importantly, on this day, we conduct Waste and Brand audits using the Break Free From Plastic's Brand Audit Toolkit and form to help us gather eye-opening data that supports our mission and vision.

World Cleanup day 2018 ©NipeFagio

OUR CAMPAIGNS

Single-use plastic Free East African Community- #SUPfreeEAC

Nipe Fagio in collaboration with several other organizations across the East African bloc aim to turn the EAC into the first single-use plastic free community across the world. This will allow us to serve as an example to other regions and to push for similar goals.

Photo: ©Sourced

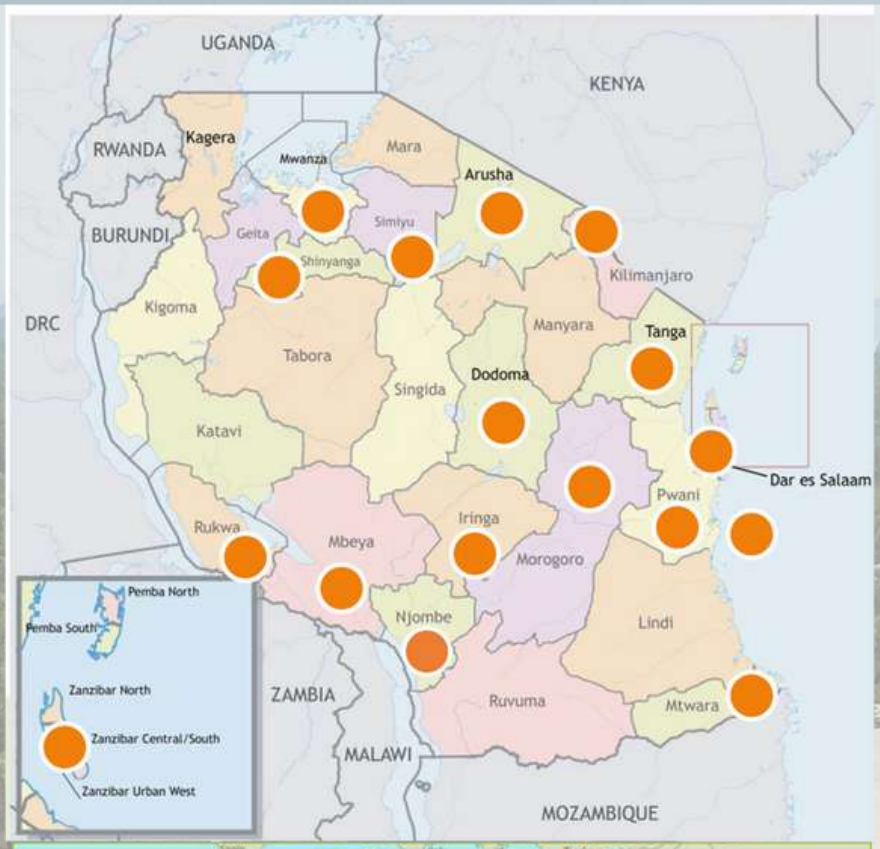
OUR METHODOLOGY

Advocate with the private and the public sector to develop Extended Producer Responsibility (EPR).

Work with communities on environmental awareness and implementation of solutions.

Work with the government on policies and plastic bag / single-use plastic ban

Our Reach


UGANDA
KENYA
RWANDA
Kagera
Mwanza
Mara
Arusha
BURUNDI
Geita
Simiyu
Shinyanga
Kilimanjaro
DRC
Kigoma
Manyara
Tanga
Tabora
Singida
Dodoma
Katavi
Dar es Salaam
Pwani
Rukwa
Mbeya
Iringa
Morogoro
Njombe
Lindi
Pemba North
Pemba South
Zanzibar North
Zanzibar Central/South
Zanzibar Urban West
ZAMBIA
Ruvuma
Mtwara
MALAWI
MOZAMBIQUE

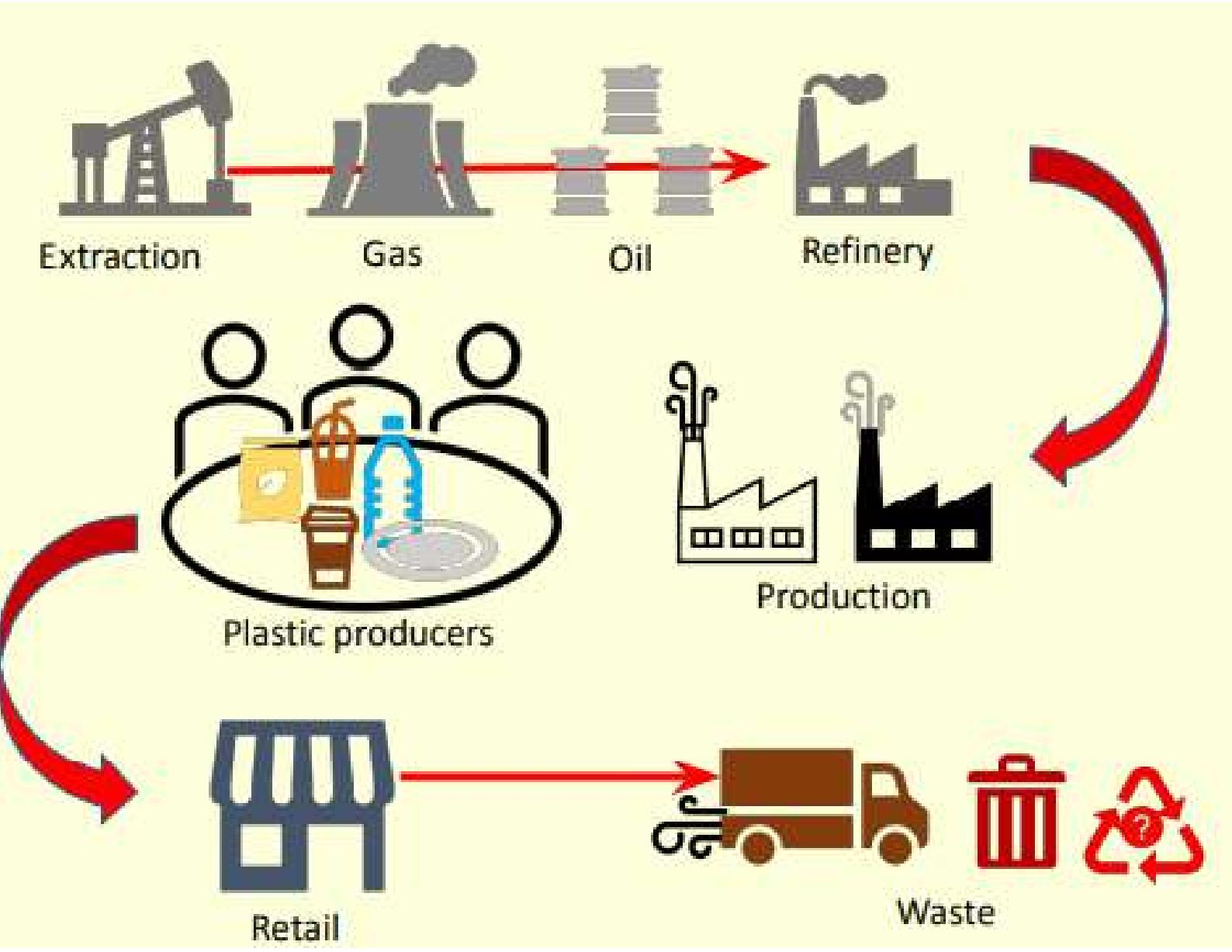

Atlantic Ocean
Morocco
Algeria
Libya
Egypt
Mediterranean Sea
Iran
Iraq
Saudi Arabia
Mauritania
Mali
Niger
Chad
Sudan
Red Sea
Yemen
Oman
Senegal
Guinea
Burkina Faso
Nigeria
Ethiopia
Somalia
Côte d'Ivoire
Ghana
Cameroon
Central African Republic
South Sudan
Kenya
Equatorial Guinea
Gabon
Congo
Democratic Republic of the Congo
Indian Ocean
Tanzania
Atlantic Ocean
Angola
Zambia
Comoros
Zimbabwe
Mozambique
Namibia
Botswana
Madagascar
South Africa
Indian Ocean
2021
Africa

CHAPTER 1
CLIMATE-CHANGE COST OF PLASTIC

The connection between plastic and the climate crisis doesn't begin when plastic waste is littered alongside riverbeds, burned informally, or incinerated to turn waste into energy. The impact of plastic on climate begins when the fossil fuel needed to produce plastic, is extracted from oil wells. The figure below gives us a clear indication of several problematic areas associated with the lifecycle of plastic. Starting from the point of extracting the crude oil and natural gases from the ground, greenhouse gases (GHG) are emitted into the air. The raw natural gas and crude oil are then refined to produce the substances that will be used in plastic production, during which time, more GHGs are emitted. At the plastic production stage, even more, GHGs are produced and emitted. It is important to note that these gases are also produced in other ways that are associated with the plastic lifecycle, including transportation (Plastic & Climate: The Hidden Costs of a Plastic Planet, 2019).

Emissions associated with the lifecycle of plastic

Figure 1: Emissions associated with plastic's lifecycle



Once the plastic items are used and discarded, they are either incinerated (particularly in developing and developed nations), dumped in landfills or even worse, this waste ends up indiscriminately dumped (particularly in countries like Tanzania, where there are insufficient and inefficient waste management systems). The after-life of plastic emits even further GHG, especially considering the degradation lifespan of some of the plastic waste. For instance, the degradation life span of a plastic bottle is at least 450 years!

If plastic production continues as it is now, projections suggest that by 2050, we would be consuming more than 12% of our entire carbon budget (Break free from Plastic Brand audit report 2021). The tragic reality is that changes in consumption are insufficient to reach the net-zero carbon emissions required to limit global temperatures to 1.5 °C above pre-industrial levels by 2050 (as advised by the IPCC). What is urgently needed is for the big corporations who produce plastic to be held accountable for the significant role that they play in the climate crisis. Only then we can slow down the climate change clock.

"We have less than nine years to halve global carbon emissions if we have any chance to limit catastrophic climate change. The time is now for corporate polluters to radically transform their business models and embrace climate justice".

Break free from Plastic Brand audit report (2021)

Zero Waste Model Facility, Bonyokwa ©NipeFagio

It is a known fact that the cost to produce new fossil fuels for plastic production is kept very low through global fossil fuel subsidies of USD$5.2 trillion annually. With this knowledge in mind, it is highly necessary to enact policies that would force corporations to change their ways. Otherwise, it would be unrealistic to expect big corporations to voluntarily change their ways (The story of plastic, 2021).

So, what is the real cost of having plastic, especially single-use plastic at our disposal? To put things into perspective, the Break Free from Plastic Brand Audit Report of 2021, gives a shocking comparison. The report shows that the revenue that Coca-Cola made in 2020 was USD$33 billion, while the cost of the GHG emissions from across the plastic lifecycle is approximated at USD$171 billion, while the societal lifetime cost of producing the plastic (up to the year 2040) is estimated at USD$71 trillion.

The societal lifetime costs of producing plastic include costs associated with the GHG emissions released during the production process and the waste management activities thereafter. There are costs bared by governments and their citizens associated with taxes needed to fund waste management. There are also costs that plastic pollution has on the marine ecosystem and tourism. On a global scale, in 2021, 1 in 5 brand audits was youth-led, which illuminates the fact that youth across the globe have taken the lead against the plastic and climate change it leads to.

Now, ***"how fair is it to expect the youth to clean up the mess that the previous generation and this generation have caused while at the same time inheriting a world that is practically unhealthy for them to live in?"***

"Most importantly, the biggest price tag for plastic pollution is costing young people their future, as entire generations will pay the ultimate price by inheriting a world in climate chaos"

Break free from plastic report, 2021.

GREENHOUSE GAS EMISSIONS AND WASTE

Greenhouse gas emissions are not only emitted from the production and distribution of products, but also the management or mismanagement of the resulting waste once these products have been used.

Taking a look at the GHG Emissions inventory of Dar es Salaam City (C40 Cities) eludes to the significant contribution of waste to the climate crisis. The report shows that the waste sector (which includes solid waste and wastewater) was the main contributor to GHG in 2016. The waste sector contributed to a whopping 40% of all GHG emissions during that year. Followed by the transportation sector (32%), followed then by the stationary energy sector (28%). From these statistics, it is clear that there is a stark connection between waste and climate.

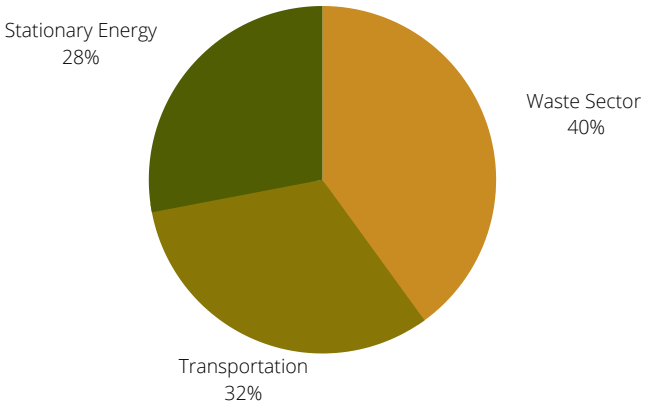


Figure 2: Overview of carbon emissions by sector in Dar es Salaam

Figure 3: Breakdown of GHG emissions in the waste sector in Dar es Salaam

Photo ©Sourced

CHAPTER 2
TANZANIA'S PLASTIC PROBLEM

The plastic waste pandemic does not exclude Tanzania. The country's population growth, increased dependence on plastic items and single-use plastic products, coupled with insufficient and inefficient waste management systems indicates that we are further away from reducing our carbon emissions. In the 9 urban centres in Tanzania with over 8 million people, only 44.6% of that population has access to waste collection services (approximately 3.6 million people).

In the absence of basic waste collection services, the remaining population resort to crude waste dumping. Even in cities such as Dar es Salaam (with close to 6 million people) that have access to a dumpsite, the dumpsite is simply inefficient and insufficient to support proper waste management activities. Basic environmental standards for landfills (design and development, leachate management, landfill gas management, fencing, and regular monitoring of waste by type and source) are not met.

This leads to further GHG emissions into the air that end up filling our lungs daily. What is more concerning is that with the mismanagement of waste collection services across the country, the amount of plastic that ends up clogging drainage systems, river beds and the sides of bridges will only get worse as population pressures increase.

Moreover, an increase in plastic waste coupled with mismanagement of solid waste leads to frequent floodings during the rainy seasons. Not only does this lead to property damage worth millions of US dollars, but it also leads to faster spread of diseases like Cholera, Malaria and even death. This shows that the plastic waste problem is multi-thronged and continues to wreak havoc in our lives from the moment the fossil fuels are extracted for their production.

Illegal dumpsite, Dar Es Salaam ©WorldBank

Flooded Neighbourhood ©Sourced

Dar es Salaam's growing population is increasingly at risk of flooding. ©Chris Morgan/World Bank

Motorcycle riders and commuter buses cross at the flooded section of Kigogo Road in Dar es Salaam following the heavy rainfall that pounded the city recently.
© MICHAEL MATEMANGA

The waste that clogs drains and fills river banks finally makes its way to the Indian ocean. Such waste ends up being food to the ocean life. Which ultimately ends on our dinner tables through the seafood that we consume.

Although more than 30-40% of solid waste can be recycled, less than 10% is recycled. In addition, the success of recycling and upcycling efforts hinges on the need for such byproducts.

But, in the Tanzanian context, the market for recycled/upcycled products is at its infancy stage. This fact further cements the idea that recycling and/upcycling measures are insufficient to handle the plastic waste problem plaguing the country.

“Studies published from 2010-2013 found that an average of 15% of the fish sampled contained plastic; in studies published from 2017-2019, that share rose to 33%”

-The Maritime Executive, 2021.

GOVERNMENT INTERVENTIONS

The government is taking important action on banning specific kinds of plastics. On the 1st of June 2019, the Tanzanian government joined 33 other African countries in banning plastic carrier bags. The law now prevents the import, export, manufacturing, sale, storage, supply, and use of all plastic carry bags.

As a further move, in October 2021, the Minister of State in the Vice president's Office (Union Affairs and Environment), Selemani Jafo has banned the use of plastic drinking straws and soft plastic covers on caps for soft drinks and mineral water bottles. The ban is expected to take effect 6 months from the 11th day of October 2021.

The ban on plastic straws and soft plastic covers on bottle caps will not only restrict the production of these plastic items but will also ban their importation.

These two items are unrecyclable, therefore are left to pile up as waste. Hon. Selemani Jafo stated that some countries around the world have banned the use of plastic straws within their countries while keep on exporting them to countries like Tanzania. Therefore, national regulations are needed to protect the countries biodiversity and the health of the population.

The measures taken show the government's intentions to reduce the circulation of specific single-use plastic items. Although being stepping stones in the right direction, these interventions are insufficient to tackle the excessive production, importation and circulation of single-use plastic items in the country. There is a need for more strict interventions to tackle this problem at the source. Which begins with the producers of single-use plastic items.

Photo: Example of Plastic Shopping bags ©Sourced

Chapter 3
Waste & Brand Analysis

Waste & Brand Audit Methodology

Nipe Fagio began conducting Waste and Brand Audits in 2018 through cleanup campaigns, and Marine and In-land litter monitoring programs. Brand Audit highlights the Brands name, Manufacturer/Producer, Product Packaging and Type of the Products collected during the audit or survey. Our goal was to establish the first database on littering in Tanzania to support government decision-making, industry advocacy, pollution monitoring and draw a connection between industrial production and waste generation.

With this database, we envision a better decision-making process connecting all necessary stakeholders to a qualitative solution set and therefore we hope to find a mutually beneficial solution in which industries produce without harming the environment as an unintended consequence.

Using the Break Free From Plastic's Brand Audit Toolkit and technology (Open Data Kit, QGIS), we define the survey area; collect all waste found in that area; and count and record the brand, parent manufacturer, product type (food, personal care, or household product), and packaging type (HDPE, PET, PVC, PP, PS, multi-layer plastics, single-layer plastics, and other) of each piece of waste collected. We also record other materials, like aluminium and glass.

As the areas cleaned usually have accumulated a huge amount of waste, a brand audit on every piece of trash collected is usually impossible, so survey leaders perform the audit on 10% of all waste collected.

The only data included in the reports are the individual pieces of the waste directly accounted for in the brand audits. No extrapolation or statistical methods are used in aggregating these data. The following sections will dive into the most recent Waste and Brand analysis that was conducted in 2021 followed by a comparison of plastic waste, residual, recyclable and hazardous waste along the 4 years of waste and brand audit analysis (2018-2021).

From the waste collected and analysed in the 2021 Waste and Brand Audit (a total of 46,948 items of waste), plastic items accounted for the highest number and percentage of the total waste count: standing at a total of 36,481 items, plastic waste accounted for 77.7% of the total waste. In the chart below we can see that plastic caps accounted for the highest plastic items (21%), followed closely by food wrappers (candy, ice-cream, chips etc) (21%), followed by plastic beverage bottles (18%), followed closely by Nylon packaging (thick, clear, packaging sheets) (13%).

PLASTIC WASTE ITEMS 2021 (UNIT COUNT)

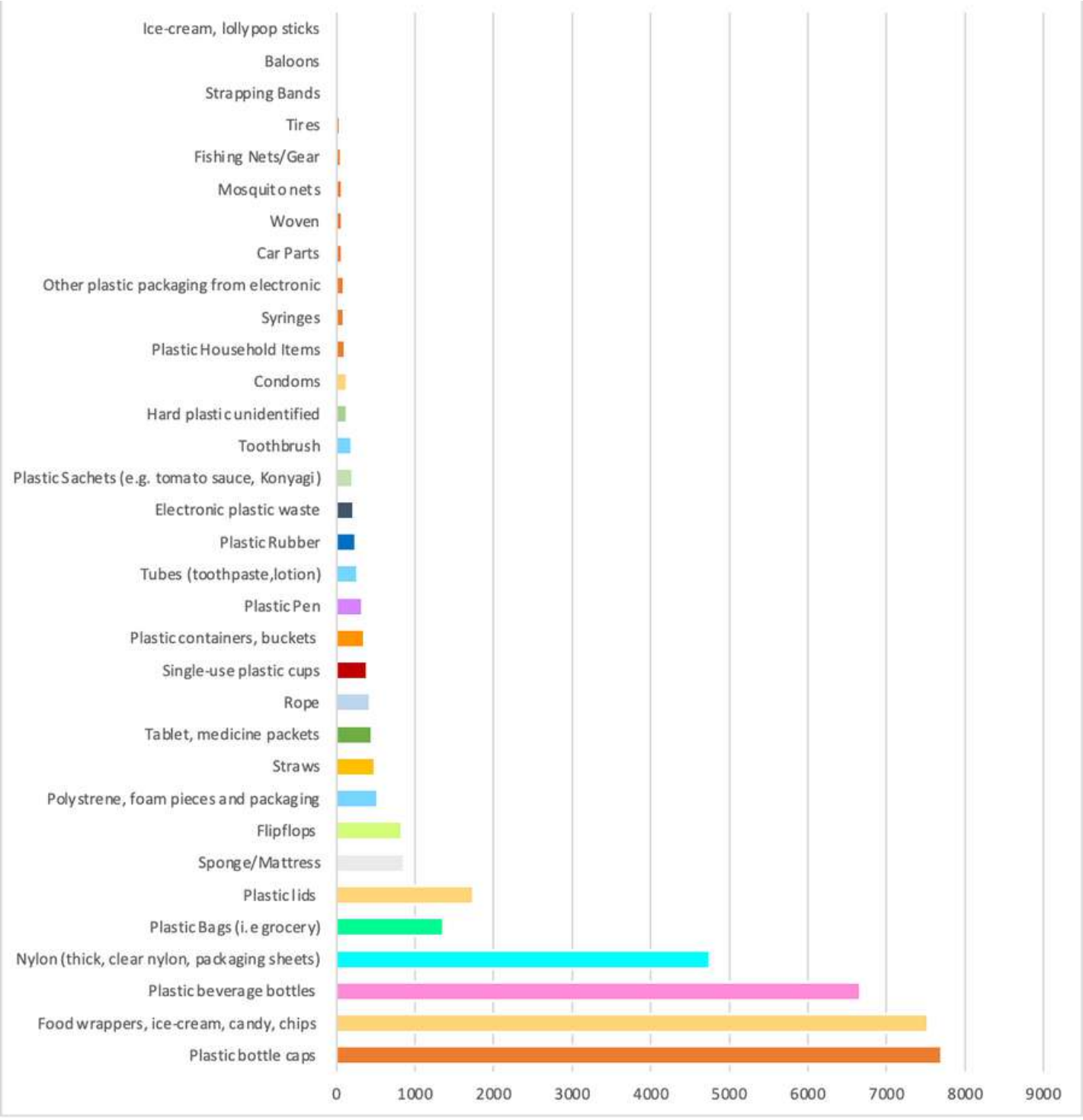


Figure 4: Plastic waste items from the waste and brand audit 2021

NON-RECYCLABLES

Non-recyclable waste or residual waste include Non-hazardous waste materials that cannot be reused or recycled. Residual waste includes such items as food wrappers, grocery plastic bags and plastic sachets to mention a few. Of the total residual/non-recyclable items collected (16,546 items) in the 2021 audits, 45.5% of those were food wrappers (candy, ice-cream and chips), followed by plastic grocery bags at 8.3% and followed by aluminium foil at 7.1%

Illustration: 10 Non-Recyclables That Drive Recyclers Crazy! Posted in Recycling Rules ©Marissa Begley

" **16,546** Residual/non-recyclable items collected | **45.5%** food wrappers (candy, ice-cream and chips) | **8.3%** plastic grocery bags | **7.1%-** aluminium foil " - 2021 audits

Photo: World Cleanup day 2021, Bonyokwa ©NipeFagio

NON-RECYCLABLE/RESIDUAL WASTE (UNIT COUNT)

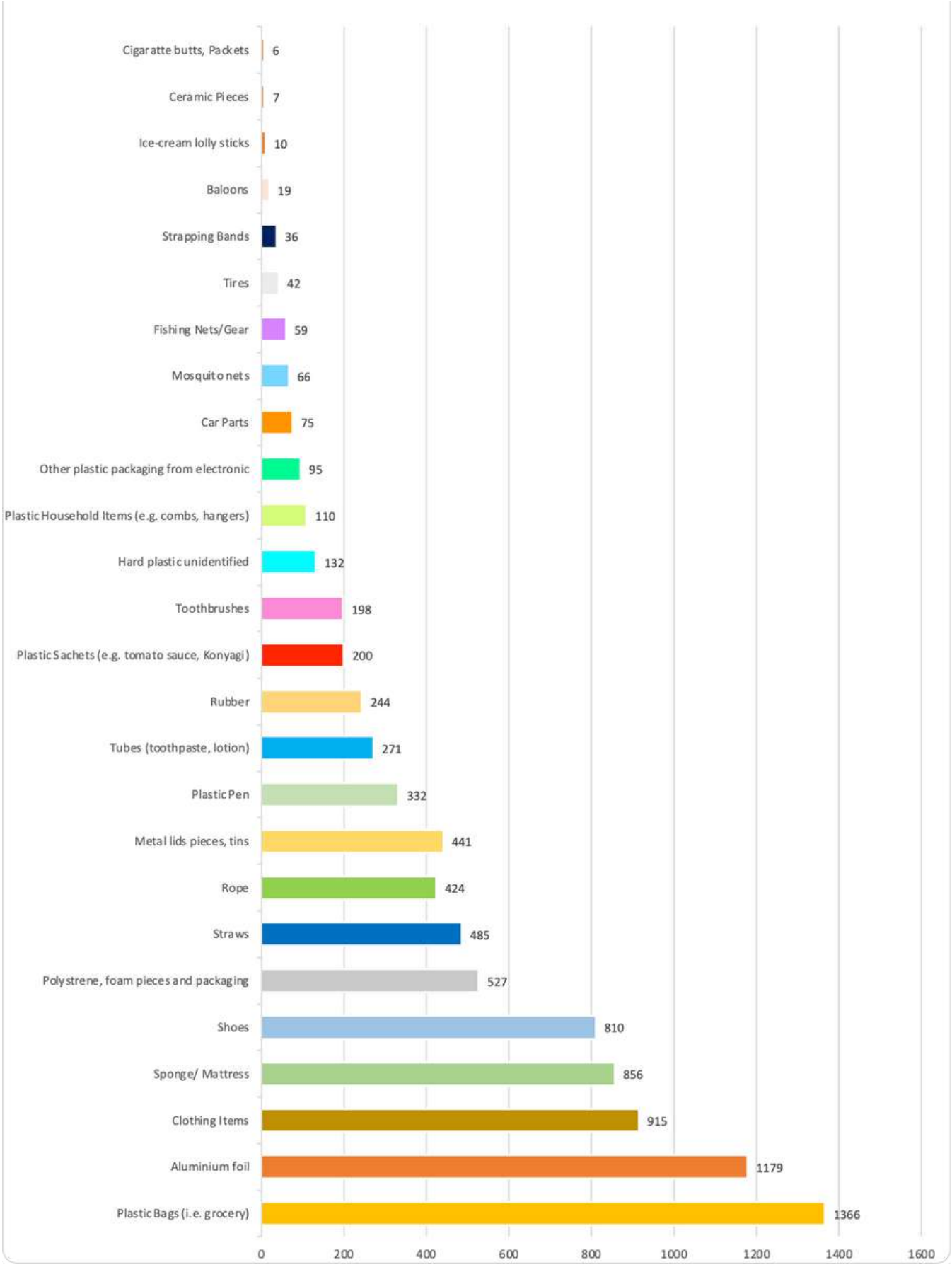


Figure 5: Unit count of non-recyclable waste

RECYCLABLES

Recyclable waste materials include such items as plastic bottle caps, plastic beverage bottles, newspapers and glass beverage bottles, to mention a few. Unfortunately, the recycling industry in Tanzania is not always in a position to effectively recycle these items - as previously mentioned, less than 10% of the recyclable items are effectively recycled/upcycled in Tanzania.

Of the total recyclable items collected (27,779 items) in the 2021 audits, 27.7% of those were plastic bottle caps, followed by plastic beverage bottles at 24% and followed by Nylon at 17.1%

Illustration: *These items may be recycled: Plastic Jugs, Plastic Bottles, Plastic Tubs, Paper Cartons, Milk Cartons, Juice Boxes, Phone Books, Mail, Catalogs, Magazines, Newspapers and inserts, Glass Jars and Bottles, Clean metal food cans, Aluminum cans, Clean Aluminum Foil, Aerosol Cans, Corrugated Cardboard, Cereal Boxes, Frozen Food Boxes, Pots and Pans, Scrap Metal, Ceramics*

Photo Below: *Polluted Beach in Dar Es Salaam ©NipeFagio*

RECYCLABLE WASTE (UNIT COUNT)

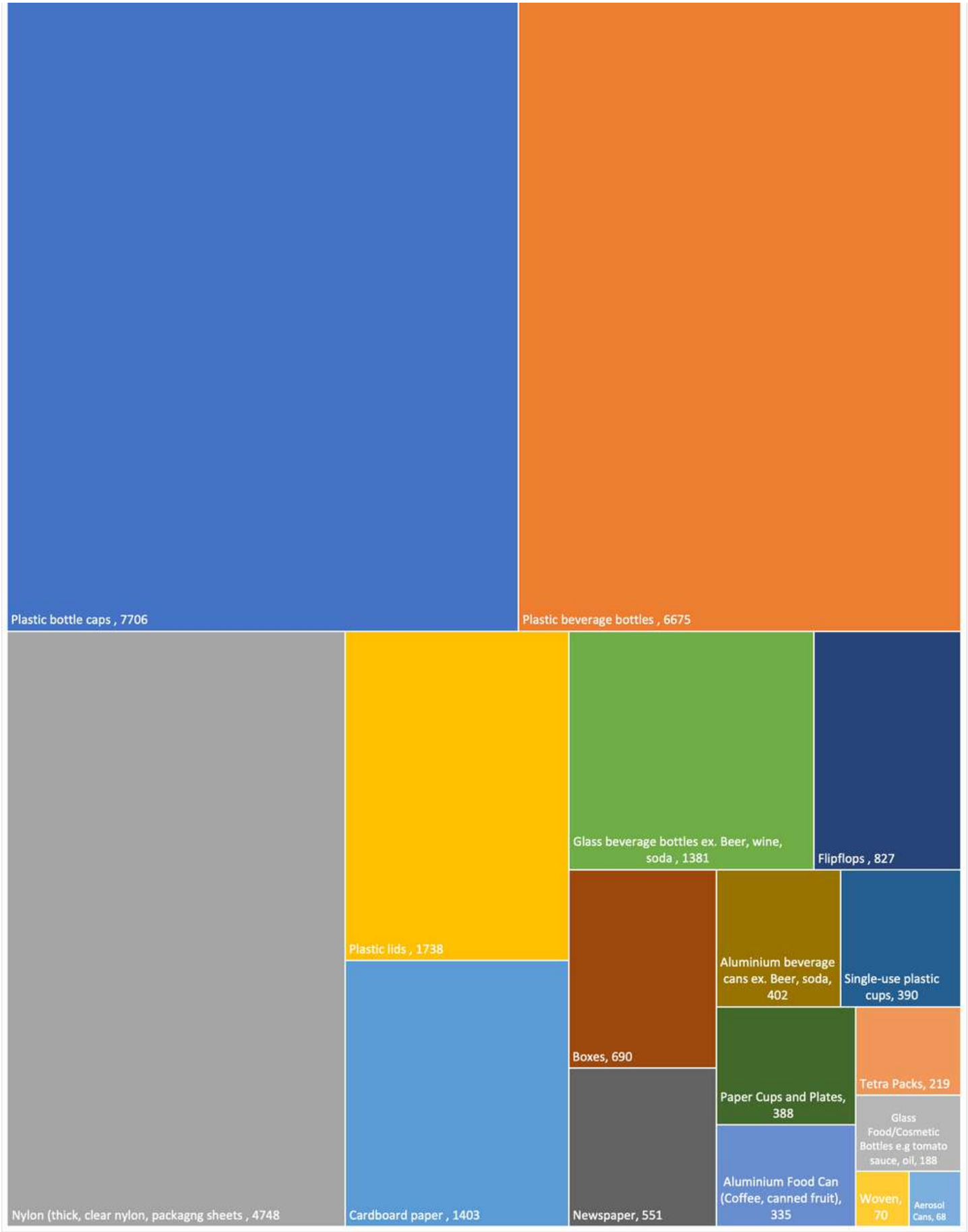
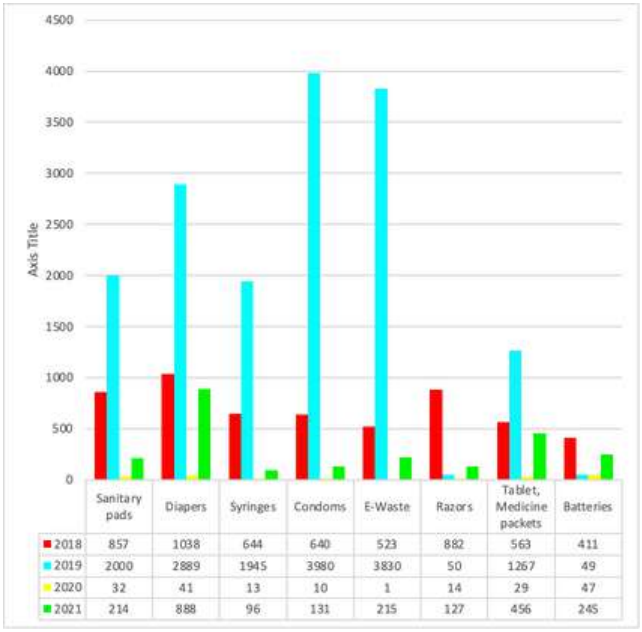


Figure 6: Unit count of recyclable waste, 2021

HAZARDOUS WASTE

Hazardous waste materials are any substances or materials that could adversely affect the safety of the public, handlers or carriers during transportation. These include items such as diapers, sanitary pads, tablet and medication packets, batteries, electronic waste, condoms and syringes to mention. Of the total hazardous items collected (2,382) in the 2021 audits, the most common items were diapers at 37.3%, followed by tablets & medicine packages at 19.1%, followed by batteries at 10.3%.

Figure 7: 4 years trend of hazardous waste in Tanzania



4-YEAR ANALYSIS OF TANZANIA'S WASTE:

In this section, we will take a look at the Waste and Brand analysis conducted between 2018 and 2021. The section will analyse the data in its totality to present a clearer picture of the make-up of the waste collected in the country during this period.

As mentioned above, community involvement and support from various key players have played a critical role in the 4 years of the beach and community cleanups. With the support of all those involved in the activities, we were able to collect 32,438 bags making a total of 628,875 kgs of waste -a total of 32,151 participants were involved (including children).

Figure 8: Numbers summary of participation on WCD (2018-2021)

	2018	2019	2020	2021	Total
Number of Participants	8,002	13,181	4,621	6,347	32,151
Number of Bags Collected	18,547	6,100	1,737	6,054	32,438
Weight	466,378	80,500	34,740	47,257	628,875

4-YEARS ANALYSIS OF TANZANIA'S COMMUNITY ENGAGEMENT

A total of 32,151 participants involved (including children)

32,438 bags collected

A total of 628,875 kgs of waste collected

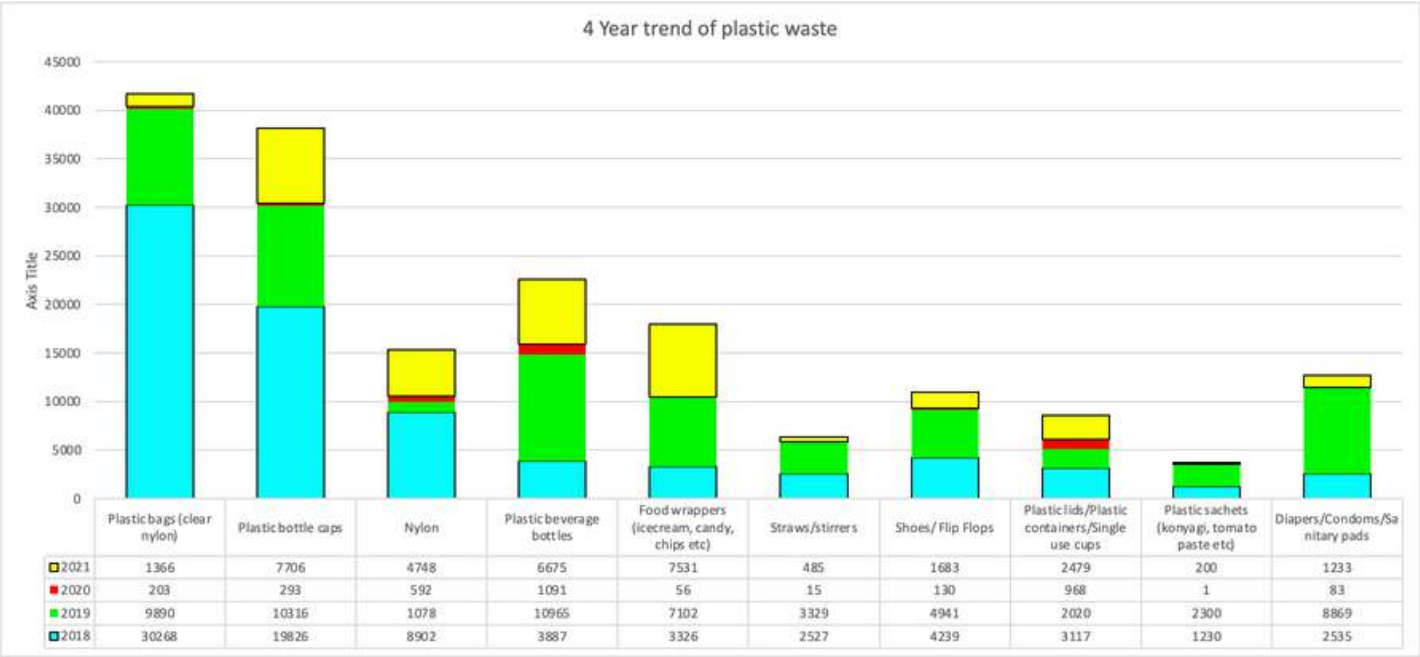
World Cleanup day 2021, Bonyokwa ©NipeFagio

PLASTIC WASTES COLLECTED IN THE 4 YEARS BETWEEN 2018 AND 2021

An analysis of the trend of plastic waste collected in the 4 years between 2018 and 2021 shows that a total of 178,205 plastic items were collected. Out of which, plastic bags (of clear nylon) accounted for the highest number of plastic waste at a total of 41,727 units (23.4%) followed by 38,141 (21.4%) plastic bottle caps, followed closely by plastic beverage bottles at 22,618 (12.7%) and 18,015 (10.1%) food wrappers. According to the data above, a clear trend can be seen in the highest number of plastic waste items year after year. The highest number of plastic waste has consistently been clear nylon plastic bags, plastic bottle caps, plastic beverage bottles, food wrappers (candy, chips, ice-cream etc), Nylon and a combination of diapers, sanitary pads and condoms.

Photo: Trash Water Fall at Coco Beach, Art by ©Made By AfriCraft

4-Year trend of top 10 plastic waste



	Plastic bags (clear nylon)	Plastic bottle caps	Nylon	Plastic beverage bottles	Food wrappers (icecream, candy, chips etc)	Straws/stirrers	Shoes/ Flip Flops	Plastic lids/Plastic containers/Single use cups	Plastic sachets (konyagi, tomato paste etc)	Diapers/Condoms/Sanitary pads
2021	1366	7706	4748	6675	7531	485	1683	2479	200	1233
2020	203	293	592	1091	56	15	130	968	1	83
2019	9890	10316	1078	10965	7102	3329	4941	2020	2300	8869
2018	30268	19826	8902	3887	3326	2527	4239	3117	1230	2535

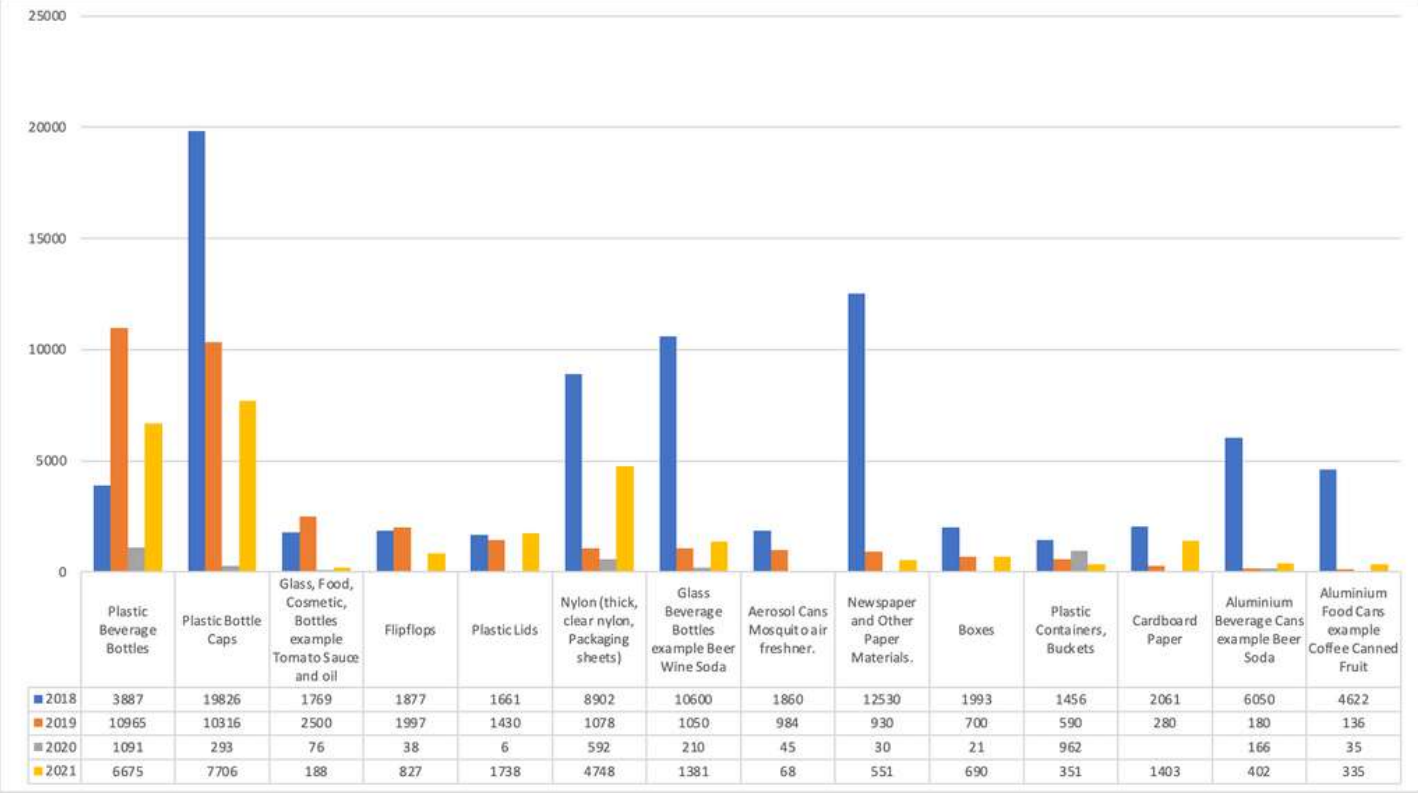
Figure 9: 4-Year trend of top 10 plastic products

PLASTIC WASTE COLLECTED IN THE 4-YEAR BETWEEN 2018 AND 2021

An analysis of the trend of recyclable waste collected in the 4 years between 2018 and 2021, shows that a total of 142,858 recyclable items were collected. Out of which, plastic bottle caps accounted for the highest number of items at a total of 38,141 units (26.7%) followed by 22,618 (15.8%) plastic beverage bottles, followed by nylon at 15,320 (10.7%), 14,041 (9.8%) newspapers & papers and 13241 (9.3%) glass beverage bottles.

Photo: *Africraft and Nipe Fagio Beach activity at Coco Beach ©Made By AfriCraft*

The 4-Year trend of recyclable waste in Tanzania



	Plastic Beverage Bottles	Plastic Bottle Caps	Glass, Food, Cosmetic, Bottles example Tomato Sauce and oil	Flipflops	Plastic Lids	Nylon (thick, clear nylon, Packaging sheets)	Glass Beverage Bottles example Beer Wine Soda	Aerosol Cans Mosquito air freshner.	Newspaper and Other Paper Materials.	Boxes	Plastic Containers, Buckets	Cardboard Paper	Aluminium Beverage Cans example Beer Soda	Aluminium Food Cans example Coffee Canned Fruit
2018	3887	19826	1769	1877	1661	8902	10600	1860	12530	1993	1456	2061	6050	4622
2019	10965	10316	2500	1997	1430	1078	1050	984	930	700	590	280	180	136
2020	1091	293	76	38	6	592	210	45	30	21	962		166	35
2021	6675	7706	188	827	1738	4748	1381	68	551	690	351	1403	402	335

Figure 10: *4-Year trend of recyclable waste in Tanzania*

RESIDUAL WASTE IN TANZANIA BETWEEN 2018 AND 2021

A depiction of the residual waste items collected in the 4 years of waste and brand audits paint a picture of the most problematic residual items that the country is grappling with. In the 4 years, a total of 41,727 plastic bags (made of clear nylon) were collected, followed by a total of 18,015 food wrappers and followed by 8,019 units of carrier plastic bags. Although carrier plastic bags have been banned since June 2019, they are still in circulation and have made up approximately 5.9% of the total residual waste items collected in the 4-year analysis.

Photo: Polluted Beach, Dar Es Salaam ©NipeFagio

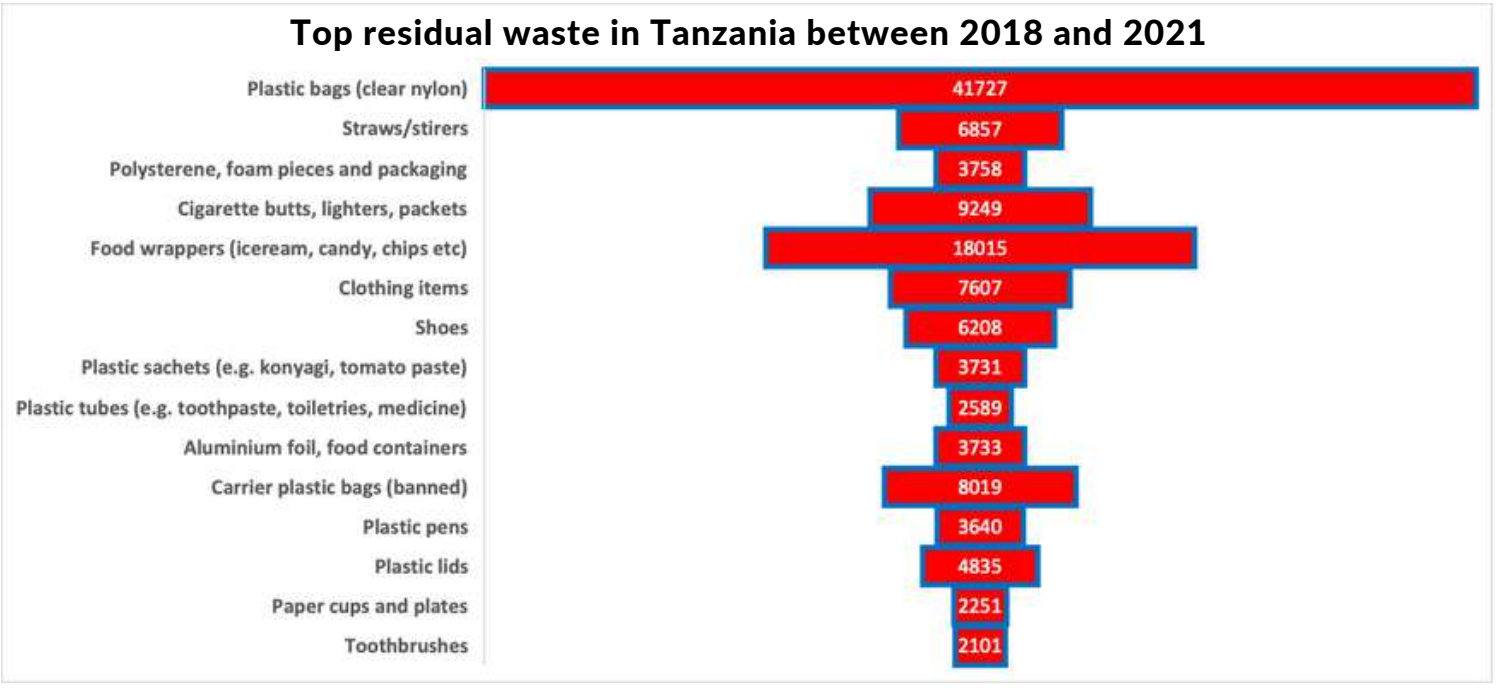


Figure 11: Unit count of top residual waste un Tanzania, 2018-2021.

Photo: Waste and Brand Audits ©NipeFagio

SUMMARY OF THE BRAND AUDIT RESULTS FOR HAZARDOUS ITEMS IDENTIFIED SINCE 2018

An analysis of the trend of hazardous waste collected in the 4 years between 2018 and 2021, shows that 24,127 hazardous items were collected. Out of which diapers accounted for the highest number of hazardous waste at 4,856 units followed by 4,761 condoms, followed closely by Electronic waste items at 4,569.

Hazardous items	2018	2019	2020	2021	TOTAL
Sanitary pads	857	2000	32	214	3103
Diapers	1038	2889	41	888	4856
Syringes	644	1945	13	96	2698
Condoms	640	3980	10	131	4761
E-Waste	523	3830	1	215	4569
Razors	882	50	14	127	1073
Tablet, Medicine packets	563	1267	29	456	2315
Batteries	411	49	47	245	752
					24127

Figure 12: Summary of hazardous waste items 2018-2021

Summary of the Brand Audit results for the top 10 producers identified since 2018

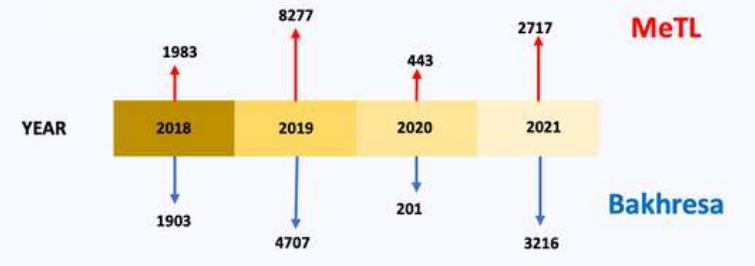
Top ten producers	2018 Units	2019 Units	2020 Units	2021 Units	Total	%
Mohammed Enterprises Tanzania Limited (MeTL)	1983	8277	443	2717	13420	31.12894621
Bakhresa Food Products Limited	1903	4707	201	3216	10027	23.2585651
U-Fresh food Ltd	308	2430	306	877	3921	9.095126534
Chemi & Cortex Limited	540	2681	84	109	3414	7.919092575
Watercom Limited	1357	815	23	252	2447	5.676045557
Unilever Ltd	308	1038	205	715	2266	5.256199114
The Coca-Cola Company	1031	382	350	479	2242	5.200528867
Tanzania Distillers Limited	190	318	234	1263	2005	4.650785182
SBC Tanzania Ltd	296	1216	29	150	1691	3.92243279
Tanzania Breweries Limited	499	599	117	463	1678	3.892278073

Figure 13: Summary of the Brand Audit results for the top 10 producers identified since 2018

SUMMARY OF THE BRAND AUDIT RESULTS FOR HAZARDOUS ITEMS IDENTIFIED SINCE 2018

From the data above, we can deduce that the top two producers who contribute to waste across the country are Mohammed Enterprises Tanzania Limited (MeTL) and Bakhresa Food Products Limited who contribute 31% and 23% respectively.

Figure 14: Unit Count contribution plastic waste, by top 2 producers (2018-2021)



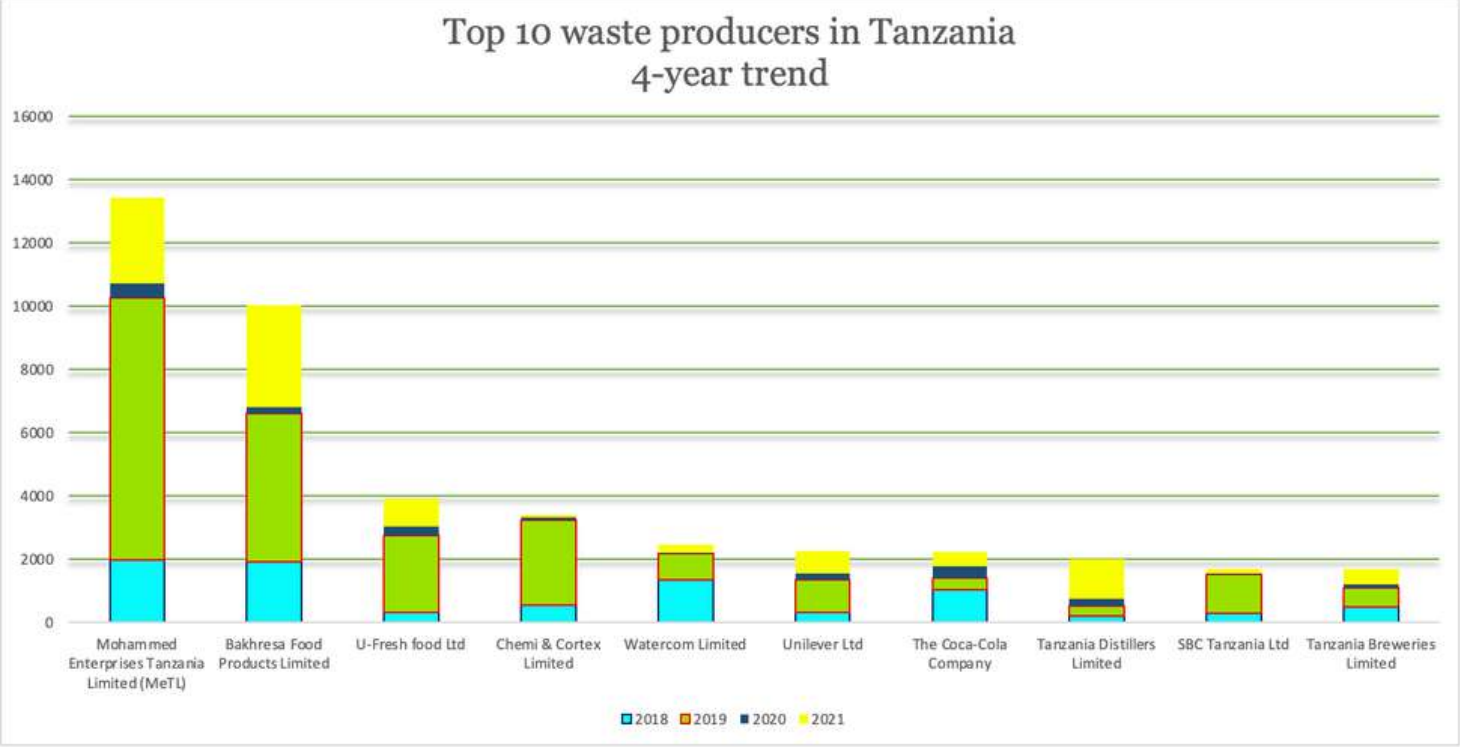


Figure 15: Top 10 plastic waste producers between 2018-2021

ORIGIN OF WASTE COLLECTED

In the years 2018, 2019, 2020 and 2021, waste and brand audits accounted for over 350,000 units of waste found in community and beach cleanups and indicate the waste composition. Results show that, on average, 64% of the waste in the sample bags audited is plastic waste. In 2021 plastic waste accounted for 76% of all waste collected, being 46% branded plastic. The Brand audits show that local manufacturers/producers are the leading polluters with 75% of all waste audited while foreign products cover 25%.

Beach Cleanup During World Cleanup Day 2021, Kichangani-Kigamboni ©NipeFagio

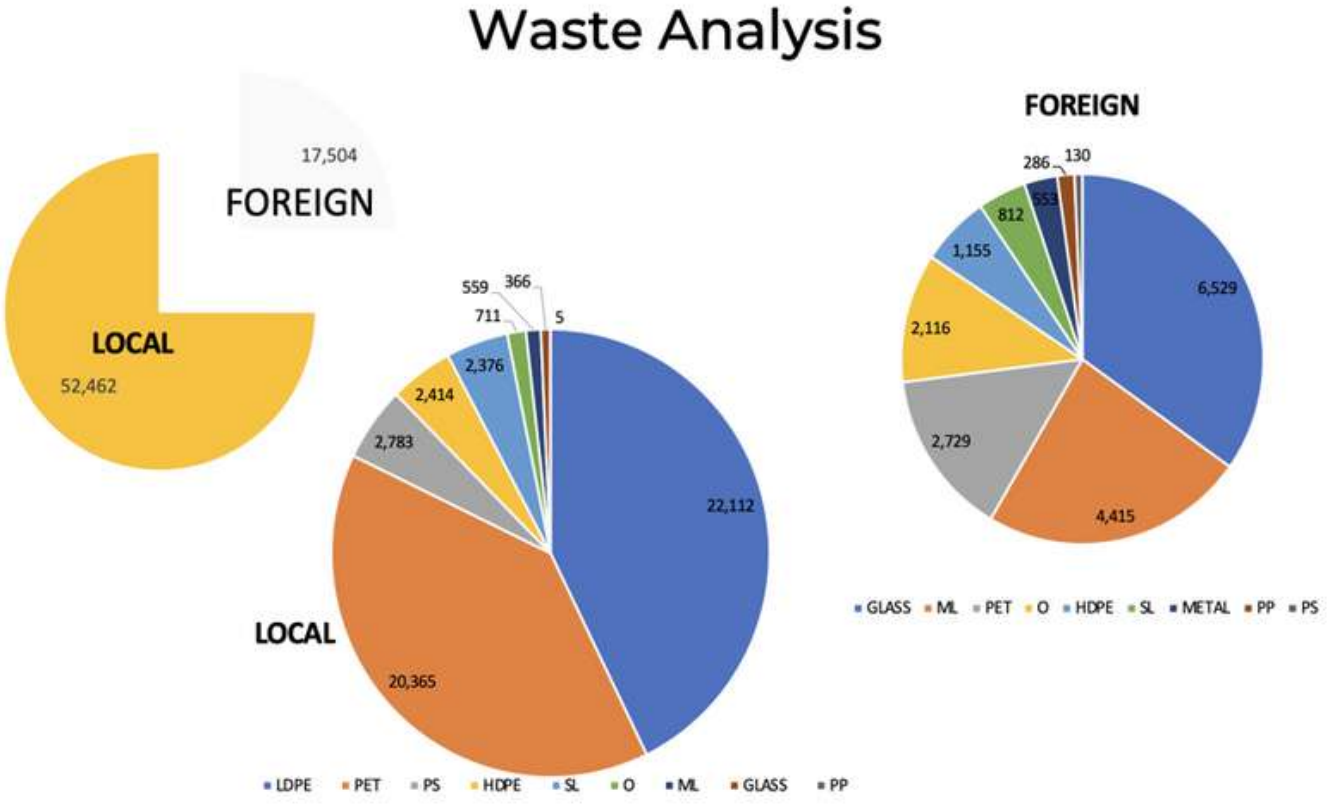


Figure 16: Origin and types of waste collected in 2018

CHAPTER 4
THE PLASTIC ACTORS IN TANZANIA

It is crucial to take a look at the actors involved in the whole cycle of plastic in Tanzania. From the production stage to those who collect and dispose of the plastic waste. To help contextualise this, we have broken down the plastic lifecycle into the producers, the consumers, and the waste collectors.

Plastic producers in Tanzania:

As mentioned before, looking at the waste and brand audit reports from the past 4 years, we see that 75% of the products audited were produced by local manufacturers/producers, while 25% of the products originate from foreign manufacturers/producers.

The top 10 local manufacturers/producers of the waste surveyed are:

Mohammed Enterprises Tanzania Limited (MeTL), Bakhresa Food products limited, U Fresh food Ltd, Chemi & Cortex Limited, Watercom Limited, Unilever Ltd, The Coca-Cola Company, Tanzania Distillers Limited, SBC Tanzania Ltd and Tanzania Breweries Limited.

These companies manufacture and produce an array of goods, from food products (covered in plastic food wrappers and plastic packaging), beverages (encased in plastic bottles, some of which are not recyclable), cleaning products (also cased in hazardous plastic materials that are not easy to recycle), to cosmetics.

It is important to note that although some of the products labelled as recyclable, cannot be recycled in Tanzania and would need to be exported to countries that can carry out the recycling, feeding the waste trade cycle and leading to further GHG emissions. For this reason, we recommend that:

- Producers/Manufacturers MUST take into account the limitations that the country has in recycling/upcycling opportunities.
- Producers/Manufacturers MUST consider alternative packaging options to reduce their contributions to the country's total plastic waste.
- Producers/Manufacturers have the ultimate responsibility for their products. This is where the Extended Producer Responsibility (EPR) concept comes into play. If each producer/manufacturer takes considerable measures to get back their discarded packaging, then perhaps the pressure on the waste management system could be reduced tremendously.
- Producers/Manufactures must reveal their plastic production data so that proper accountability is taken by each contributor as part of the EPR regulations.

PLASTIC CONSUMERS IN TANZANIA:

Each consumer must take responsibility for the waste that they produce each day. For instance, if one consumes a banana, she/he must discard off the banana peel in the appropriate location. This is indeed a commonsensical matter. Sadly, in far too many instances, consumers tend to have a carefree attitude towards their contribution to improper waste disposal. Especially plastic waste.

However, what happens to the waste that is gathered by households without sufficient waste collection services? How can these households avoid disposing of their waste by river beds or behind their homes? It is a well-known fact that many communities are underserviced by waste collection services.

70% of Dar es Salaam city is living in underserviced or completely unplanned locations and only 40% of the entire city's population has access to waste collection services.

These statistics unveil the simple truth that the lack of sufficient and efficient waste management services, has crippled consumers' ability to manage their waste appropriately, therefore inadvertently contributing to the climate impact associated with their plastic waste and organic waste.

Rapid growing city, Dar es Salaam ©Sourced

There are a couple of things we, as consumers, can do to contribute to climate mitigation and to appropriate waste management:

a) Reduce our consumption of single-use plastic. By reducing such consumption, we are putting pressure on suppliers to also reduce their production of such materials. Considering the nature of corporations, producers/manufacturers will be forced to find alternative means of delivering their products to us.

b) We should continue demanding for change to happen. We can do this by spreading the word about the impact of plastic on the climate crisis. Additionally, we have the ultimate responsibility to raise our children and the coming generation to make better consumption choices.

Plastic Waste Picker, Value Waste Picker Campaign ©NipeFagio

CHAPTER 5
PROBLEM WITH THE CURRENT SITUATION

There have certainly been government interventions to reduce the plastic waste produced by producers and manufacturers in the country. For instance, the regulation that bans the use of plastic grocery bags has had a positive outcome of stopping the production and sale of such bags. However, clear nylon bags are still in circulation based on a grey area that exists in the regulation. This grey area allows for items like vegetables packaged by sellers in clear nylon bags to be sold under the guise that they need to be packaged as such, for quality purposes. This grey area results in nylon bags in our environment. It is therefore clear that such interventions are insufficient to tackle the plastic waste problem considering the continued growth of single-use plastic products in the country.

Not only is plastic waste continuously growing, but the way such waste is managed is concerning. As previously mentioned, only 44.6% of Tanzanians have access to waste collection services. The rest of the population relies on crudely dumping waste in various areas. Such haphazard waste disposal further adds to the GHG emission from the waste that sits while waiting to decompose. Some of which we now know will never disintegrate (e.g., plastic beverage bottles) but only break down into microplastics, posing a tremendous threat to our ecosystem.

Plastic Waste Picker, Value Waste Picker Campaign ©NipeFagio

The system under which these single-use items operate is that once the products within the packaging are consumed, the packaging is discarded immediately. A study by the World Economic Forum showed that the solid waste that we generate has grown from 25 billion tons in 1990 to 86 billion tons in 2020.

This figure is projected to grow to 140 billion tons by 2050! (Szmigiera, M. 2021). There is rarely a place for such packages to be reused. We live in a disposable-goods ecosystem that focuses on short term convenience use at the expense of long-term environmental impact. Some argue that we can rely on recycling efforts to curb the plastic problem that our societies are facing. However, studies have shown time and again that recycling is not the answer to this problem. In fact, according to the report, only a small portion of our plastic waste (14%) get recycled. Out of which 2% is “effectively recycled” into an equally useful item as its original form. It is important to note that most recycled plastic is actually “downcycled” into something less useful than before.

The recycled plastic is often only recycled once before being dumped into a landfill or into the ocean. 14% of the plastic waste is sent to incinerators (where substantial GHG are emitted), 40% are sent to landfills and 32% are littered. In the case of Tanzania, instead of incinerators, community members, who lack access to waste collection services, may resort to crudely burning their waste.

This is problematic because GHG is still emitted through such burning, and there is a risk of damage to property as well.

Cost implications of solid waste management: There are several problems associated with the solid waste management solutions in place. These problems are better understood by taking a look at the cost implications associated with the current system. Developing, running and operating landfills as a waste management option can be pricey. If we couple the many costs associated with landfills along with the fact that they only reach a small portion of the population indicates the inefficiency of such a system. An efficient system should be able to handle all waste produced and at the same time, it should be cost effective.

Photo ©NipeFagio

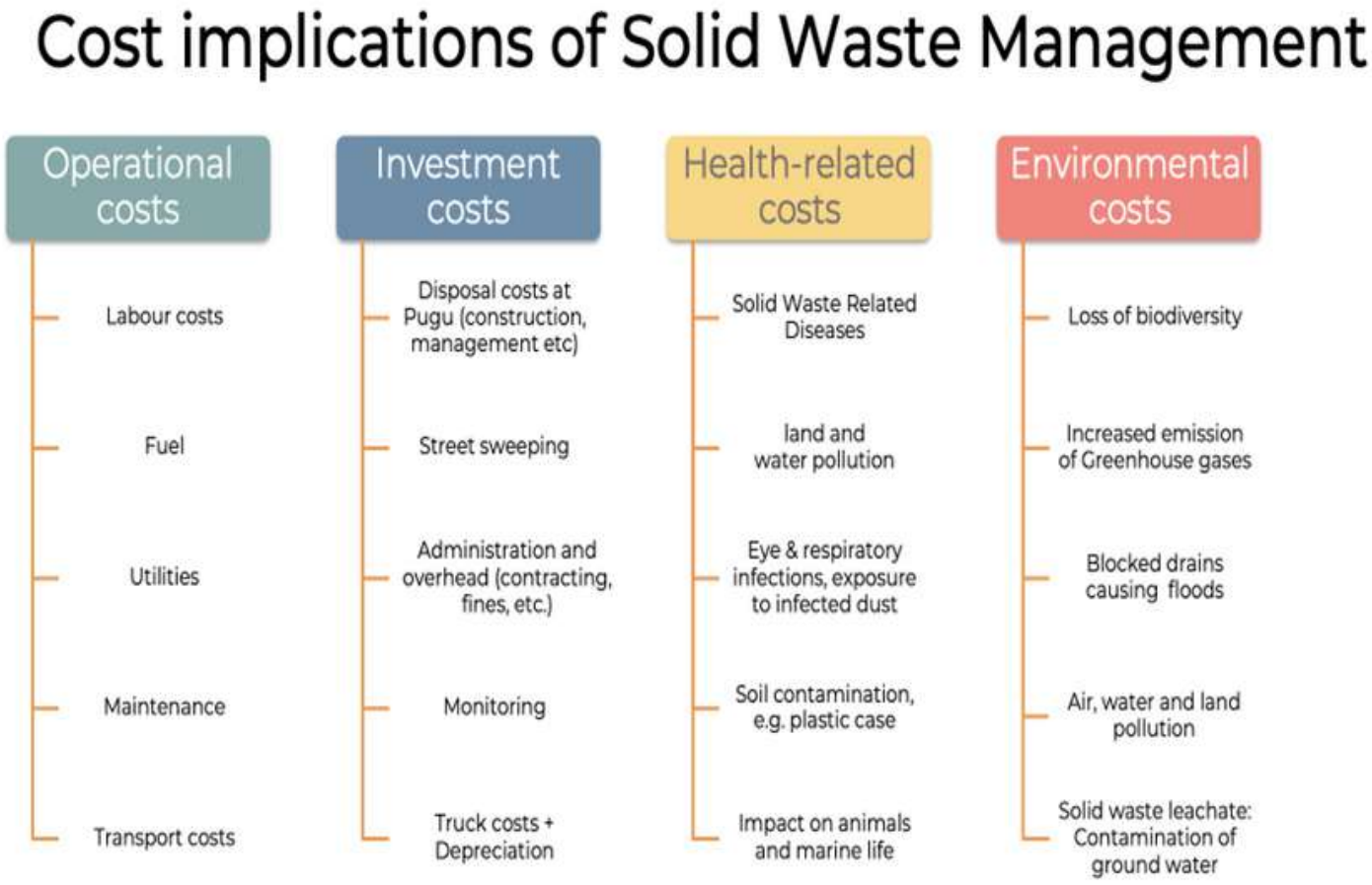


Figure 17: Cost implications of solid waste management

Job opportunities and various waste management systems:

Evidence shows that the waste management approaches that have the best environmental outcomes also generate the most jobs (GAIA Zero Waste and Economic Recovery Report, February 2021). According to the report, landfills and incinerators create the least number of jobs per 10,000 tons of waste per year. On the opposite end, the repair and recycling sector create the highest number of jobs at 404 jobs and 115 jobs per 10,000 tons of waste per year, respectively. The figure below illustrates these numbers clearly.

Plastic Waste Picker, Value Waste Picker Campaign ©NipeFagio

From the evidence above, it is clear to see that relying on landfills and incinerators are not only associated with fewer jobs, but they also have expensive price tags for their operations. Beyond that, these options are ineffective in dealing with the growing solid waste problem that is linked with a growth in population and our increased reliance on single-use plastic.

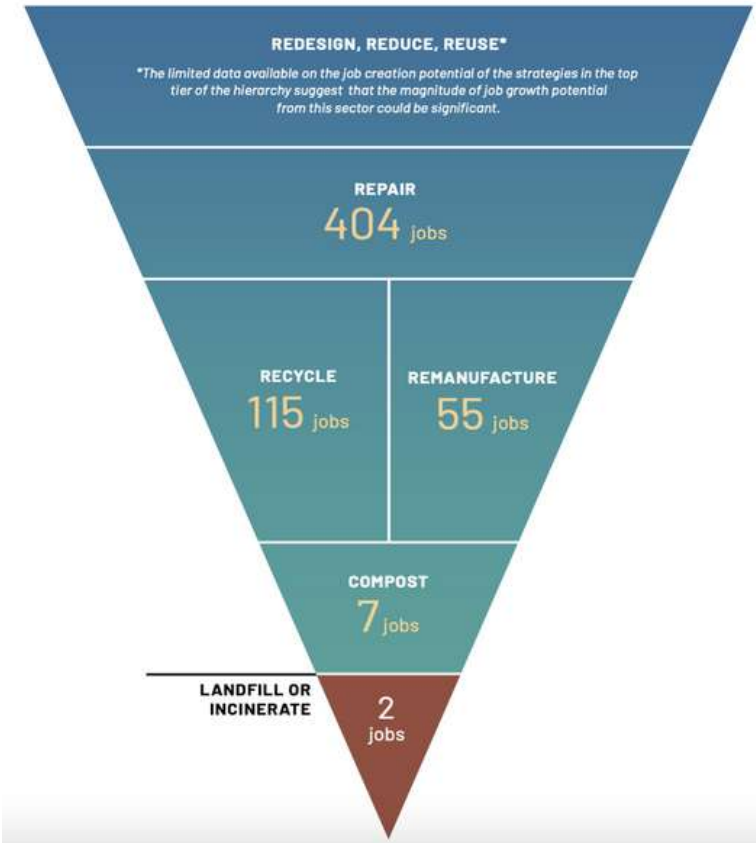


Figure 18: Waste Hierarchy with mean job generation figures per ten thousand tonnes of waste processed per year

Plastic Waste Pickers, Value Waste Picker Campaign ©NipeFagio

CHAPTER 6
FUTURE RECOMMENDATIONS /PROPOSALS

Globally, children under the age of 15 make up 26% of the world's population. In Africa, this age group make up about 40% of the population (Szmigiera, M. 2021). Sadly, this population will certainly inherit a world that is battling a climate crisis that is caused in part by our addiction to fossil fuel-based plastic. According to the IPCC, we have less than a decade to cut our carbon emissions by half in order to curb catastrophic climatic conditions (Story of plastic 2021).

Top corporate plastic polluters that are driving the climate crisis are evading their responsibilities by transferring them to the next generation to deal with. If these corporations are not held responsible for their contribution TODAY, children across the world will forcefully live through the effects of the production, use and disposal of single-use plastic. The brand audit report from the Break Free from Plastic projects that youth in Global South countries, like Tanzania, will be more affected than those in developed countries. This is based on the fact that there is an unfair distribution of single-use plastic items throughout the Global South countries in comparison to the Global North.

"In the year 2030, they will be 25-33 years old, young adults building a livelihood and perhaps starting families of their own. The climate impacts of plastic throughout its life cycle threaten their ability to lead healthy, fulfilled lives" (Knowledge Team, Let's Do It Foundation 2018).

The current situation begs for a change in our production, consumption and wastage system as a whole. For this reason, the Zero Waste (ZW) management system is the answer to our problem. Zero waste systems are based on the commitment to constantly:

- Improve the management of resources;
- Reduce progressively the amount of waste generated;
- Increase the percentage which is reused/recycled/composted;
- Assess what is not recovered to have it redesigned (Ingilizian, Z., Ghosh, M., and Bovis, B. 2016).

This model seems to be the most promising solution to the growing threats of solid waste in our communities and the subsequent climate crisis.

Photo: *Youth and Children's during World Cleanup Day 2018 at Mikadi Beach, Kigambonii ©NipeFagio*

OUR RECOMMENDATIONS

1. Phasing out of single use plastic items:

If the entire plastic lifecycle were a country, it would be the fifth-largest emitter of greenhouse gases in the world. Personal lifestyle changes alone will not solve the plastic or climate crises. A report from the International Energy Agency estimates that individual behavioural changes would only account for about 4% of the reductions needed to avert catastrophic climate change. Structural, systemic changes are needed to radically address the interconnected crises of climate change and plastic pollution at the source.

2. Push on corporates to reveal their plastic production:

The plastic crisis is spearheaded by plastic corporations. For this reason, our second recommendation is directed towards corporates. Plastic polluters often spend a substantial amount of money towards their marketing and sales initiatives to increase sales of single-use items. For example, in 2019 Coca-Cola invested $4.24 billion in advertising and marketing while, in the same year, Coca-Cola spent only $11 million on a river cleanup initiative.

National governments must work together to develop and enforce meaningful regulations. Governments must hold fossil fuel companies and corporate plastic polluters accountable for their contributions to the climate crisis. National governments must also avoid climate-polluting false solutions to the plastic crisis, such as incineration and chemical recycling.

It is, therefore, our recommendation that plastic producing corporations must REVEAL their total global plastic footprints and greenhouse gas emissions.

***Photo**: Community Cleanup Activity ©NipeFagio*

3. Push for corporates to change their delivery system:

For plastic manufacturers and producers to help fight the climate crisis, they must REDUCE the amount of plastic produced by ending their reliance on single-use packaging. In addition to that, efforts to REDESIGN their products and delivery systems in exchange for products that allow for easy refill & reuse are encouraged.

To expect manufacturers and producers to cut down the production of their goods would be unreasonable. However, as an alternative, plastic producers can use packaging that allows for products to be refilled once customers consume them. For instance, some bottled water companies operate under a return and refill system for their 20l water bottles.

Under this system, customers initially buy the refillable bottles and subsequently return the bottles in exchange for already filled ones. This way, customers are no longer disposing of the plastic bottles after a single-use, but rather returning the used bottles to the bottling company to refill. Studies show that countries that adopt a refill & return system instead of single-use plastic have had positive outcomes. Important to mention that Tanzania has this system in place for partial production of sodas and beers, for example.

The central findings from these studies show that on average, countries that have the least per capita wastage tend to collect their beverage containers through a deposit return system. This system applies to both single-use and refillable containers. Interestingly, even when countries adopt one of the two systems (whether refillable or deposit return system), the shift shows marked impacts on wastage (The Social, Environmental, & Economic Benefits of Partnering with Informal Recyclers). These findings show that single-use plastic producers and manufacturers can change their delivery systems to curb the climate crisis that their products contribute towards.

Photo Left -Right: Regional World Cleanup Day 2018 ©NipeFagio

4. Extended Producer Responsibility (EPR) regulations:

The fourth recommendation is a call for the implementation of Extended Producer Responsibility (EPR) schemes within the country. The EPR scheme is an essential part of reducing the single-use plastic problem that plagues and will continue plaguing our country.

The EPR schemes will ensure that all manufacturers and producers who introduce packaging to the market comply with strict regulations and contribute funding towards the collection and processing of their packaging after use. This is a meaningful way and seems like a likely pathway to provide the necessary funding to deal with waste from the packages in inclusive systems that promote income for vulnerable populations. It is right for the producers and manufacturers of single-use plastic items to be held responsible for their contribution to the plastic waste in the country, otherwise tens of millions of tons of packaging will continue piling up in our dumpsites without a solution for their afterlife.

We can eliminate single-use plastic packaging that we essentially don't need, we can also adopt the return and refill packaging systems. However, we will still have packaging that cannot be reused, recycled or composted.

Binding EPR schemes can tackle such packages to ensure that they do not end up in the environment and release from public budgets the burden of dealing with the waste management crisis. It is highly unlikely that producers and manufacturers will voluntarily contribute sufficient funds towards EPR without enforced and binding regulations.

5. Better working conditions for informal waste pickers:

Considering the essential role that waste pickers play within our communities, they must be afforded better working conditions. Not only are better working conditions necessary, but they must also be acknowledged as being essential workers, without whom, our communities would potentially falter under the waste that we produce daily. Waste Pickers also must be recognized for being responsible for most of the waste recovery that happens in the country.

Studies have shown that having an inclusive relationship with waste pickers reduce waste management costs (The Social, Environmental, & Economic Benefits of Partnering with Informal Recyclers. GAIA). The potential that waste pickers have in tackling the climate crisis and reducing the plastic pollution that plagues our communities is substantial. For this reason, our recommendation is that waste pickers are afforded better working conditions and are included in waste management systems.

Photo: *Plastic Waste Picker, Value Waste Picker Campaign ©NipeFagio*

CONCLUSION & SUMMARY

- Plastic comes from fossil-fuel extraction. When these fuels in the form of natural gas or crude oil, are extracted and transported to produce plastic items, a great amount of GHG is emitted into the atmosphere. Studies indicate that during this production and transportation stage, up to 108 million metric tons of CO2e are emitted annually (Break free from plastic 2021).

- Once these fuels are extracted, they need to be refined to produce plastic materials, which releases further GHG into the air. In fact, plastic refining is the most greenhouse gas-intensive process in the manufacturing of plastic and the fastest growing. The process of producing plastic resins (the material used to make the different plastic items) consumes a great amount of energy and releases a significant amount of carbon emissions into the atmosphere. In 2015 alone, emissions from the production of plastic resins were 184.3–213.0 million metric tons of CO2e. This is as many as 45 million passenger vehicles driven for one year (Plastic & climate. The hidden cost of a plastic planet).

- The sad truth is that corporations tend to allocate the production and manufacturing facilities in low-income communities and in the global south. Those are the communities that end up shouldering the greatest risk of illnesses and generational health-related issues associated with exposure to plastic pollutants.

- Corporations have tended to offer better and more recyclable options to the communities in the Global North while exposing the Global South to unrecyclable or hard to recycle plastic items.

- When plastic items have been used (oftentimes, once-off), they are disposed of in unplanned areas such as river beds, in the backyard of underserviced neighbourhoods and even on the side of the streets. While these plastic materials are laying there, they not only emit great amounts of GHGs, they are also contributing to the degradation of soils and lands in general. Leading to multiple thronged implications to these communities living in and around such conditions.

- Corporations who benefit financially from the extraction, manufacture and sales of single-use plastic items must be held accountable GLOBALLY. It is simply unfair that a small portion of the world benefits while the voiceless community members who have had no relation in the production of these items bear the brunt of the climate crisis the most.

Photo: Community engagement campaigns ©NipeFagio

- Personal lifestyle changes alone will not solve the plastic or climate crises. A report from the International Energy Agency estimates that individual behavioural changes would only account for about 4% of the reductions needed to avert catastrophic climate change. Structural, systemic changes are needed to radically address the interconnected crises of climate change and plastic pollution at the source.

- 69 of the 100 largest economies in the world are companies — not countries. Corporate actors must lead the way to a plastic-free and climate-safe future because they have the power, the means and resources to transform this vision into reality.

Photo Right: A Waste Collector, Zero Waste Model in Bonyokwa
Photo Left: A Waste Picker, Value Waste Picker Campaign ©NipeFagio

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